(2) Arranged so that no discharged fluid will cause an additional fire hazard.

(b) Each designated fire zone must be ventilated to prevent the accumulation of flammable vapors.

(c) No ventilation opening may be where it would allow the entry of flammable fluids, vapors, or flame from other zones.

(d) Ventilation means must be arranged so that no discharged vapors will cause an additional fire hazard.

(e) For category A rotorcraft, there must be means to allow the crew to shut off the sources of forced ventilation in any fire zone (other than the engine power section of the powerplant compartment) unless the amount of extinguishing agent and the rate of discharge are based on the maximum airflow through that zone.

§ 29.1189 Shutoff means.

(a) There must be means to shut off or otherwise prevent hazardous quantities of fuel, oil, de-icing fluid, and other flammable fluids from flowing into, within, or through any designated fire zone, except that this means need not be provided—

(1) For lines, fittings, and components forming an integral part of an engine;

(2) For oil systems for turbine engine installations in which all components of the system, including oil tanks, are fireproof or located in areas not subject to engine fire conditions; or

(3) For engine oil systems in category B rotorcraft using reciprocating engines of less than 500 cubic inches displacement.

(b) The closing of any fuel shutoff valve for any engine may not make fuel unavailable to the remaining engines.

(c) For category A rotorcraft, no hazardous quantity of flammable fluid may drain into any designated fire zone after shutoff has been accomplished, nor may the closing of any fuel shutoff valve for an engine make fuel unavailable to the remaining engines.

(d) The operation of any shutoff may not interfere with the later emergency operation of any other equipment, such as the means for declutching the engine from the rotor drive.

(e) Each shutoff valve and its control must be designed, located, and protected to function properly under any condition likely to result from fire in a designated fire zone.

(f) Except for ground-use-only auxiliary power unit installations, there must be means to prevent inadvertent operation of each shutoff and to make it possible to reopen it in flight after it has been closed.

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29–12, 41 FR 55473, Dec. 20, 1976; Amdt. 29–22, 49 FR 6850, Feb. 23, 1984; Amdt. 29–26, 53 FR 34219, Sept. 2, 1988]

§ 29.1191 Firewalls.

(a) Each engine, including the combustor, turbine, and tailpipe sections of turbine engine installations, must be isolated by a firewall, shroud, or equivalent means, from personnel compartments, structures, controls, rotor mechanisms, and other parts that are—

(1) Essential to controlled flight and landing; and

(2) Not protected under § 29.861.

(b) Each auxiliary power unit, combustion heater, and other combustion equipment to be used in flight, must be isolated from the rest of the rotorcraft by firewalls, shrouds, or equivalent means.

(c) Each firewall or shroud must be constructed so that no hazardous quantity of air, fluid, or flame can pass from any engine compartment to other parts of the rotorcraft.

(d) Each opening in the firewall or shroud must be sealed with close-fitting fireproof grommets, bushings, or firewall fittings.

(e) Each firewall and shroud must be fireproof and protected against corrosion.

(f) In meeting this section, account must be taken of the probable path of a fire as affected by the airflow in normal flight and in autorotation.

[Doc. No. 5084, 29 FR 16150, Dec. 3, 1964, as amended by Amdt. 29–3, 33 FR 970, Jan. 26, 1968]

§ 29.1193 Cowling and engine compartment covering.

(a) Each cowling and engine compartment covering must be constructed and